

PROJECT NUMBER: 1101
PROJECT TITLE: Entomological Research
PROJECT LEADER: D. L. Faustini
PERIOD COVERED: April, 1988

I. CIGARETTE BEETLE (CB) PHYSIOLOGICAL STUDIES

A. Objective: To conduct research investigations designed to produce results that lead to the control of the CB growth and development.

B. Results: The 5-day modified atmosphere tests using a nitrogen environment did not always demonstrate 100% CB mortality (1). Consequently, a 6-day exposure period was conducted. To date using 32,000 insects, 100% mortality has been observed.

Methoprene free tobaccos were blended and cut into filler. The filler was treated at 2.5 ppm (*S*-methoprene) and 5.0 ppm (*R,S*-methoprene) (2).

Iron oxide (oxygen absorber) sachets were evaluated as a control method for the CB in bags of cut filler. Polyethylene (PE) bags were dosed at 1, 2, or 3 sachets/PE bag. Preliminary results showed an average of 99, 92, and 100% CB control in the respective treatments. Survivorship was attributed to oxygen entering the PE bag through small holes created from the heat seal bar (3).

A carbon dioxide disinfestation was conducted at Park 500 Leaf warehouse #2 for a 9-day exposure at $30 \pm 17\%$ CO₂. This work was performed in collaboration with Leaf, E&EP, and QA. One hundred percent CB mortality was achieved for eggs, larvae and adults and 95% for pupae (4).

C. Plans: To obtain data necessary for ARS/APHIS approval of a modified atmosphere as a quarantine treatment, methoprene treated fillers will be made into cigarettes, packaged and shipped to Japan's Danchi Evaluation Panel. Iron oxide sachets will be evaluated against 40-100,000 CBs to gain ARS/APHIS approval as a treatment for export cut filler. The large scale disinfestation of tobacco warehouses using CO₂ will be recommended to the Pest Management Committee as an alternative to phosphine fumigations.

D. References

1. S. Drew. Memo to D. L. Faustini. Status and Results of Isolcell® Test for ARS. April 7, 1988.
2. R. M. Lehman. Notebook No. 8519, pp. 65-66.
3. R. M. Lehman. Notebook No. 8519, pp. 67-69.
4. D. T. Wagner. Memo to L. Ryan. CO₂ Fumigation Park 500. March 30, 1988.

II. SERVICE TO OTHERS

A. Objective: To conduct and provide technical services to areas outside R&D.

B. Results: Two herbicides were added to the pesticide list (1).

Leaf Department was consulted regarding entomological experiments to be conducted in warehouse storages in 1988-89 (2).

Zoecon Corp. requested PM support for the use of methoprene by meeting with B.A.T. in May to discuss toxicology/safety of this material (3).

Assistance was provided to: the Turkish government regarding the subject of methoprene registration (4); TACASA (Guatemala) regarding the use of synthetic pyrethroids; PM Australia on the use of space sprays, pheromone traps and warehouse fumigations.

C. References

1. L. Ryan. Memo to T. Newman. Herbicides for Broadleaf Weed Control. March 30, 1988.
2. M. Minor. Memo to D. L. Faustini. Consultation with Leaf Dept. Management on Proposed Studies for 1988-89. April 15, 1988.
3. D. L. Faustini. Memo to R. W. McCuen. Meeting Scheduled with B.A.T. to Discuss the Safety of Methoprene. April 20, 1988.
4. D. L. Faustini. Letter to Dr. Gürbüz Capan. RE: Registration of Methoprene (Kabat® and Dianex®) in Turkey. April 20, 1988.